Fig.1A

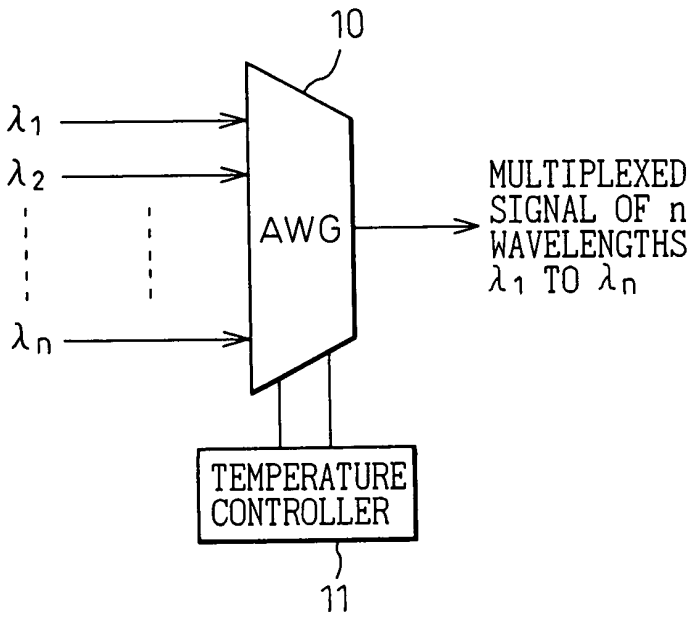
10
λ1
λ2
λn
AWG
MULTIPLEXED SIGNAL OF n WAVELENGTHS λ1 TO λn
TEMPERATURE CONTROLLER
11

Fig.1B

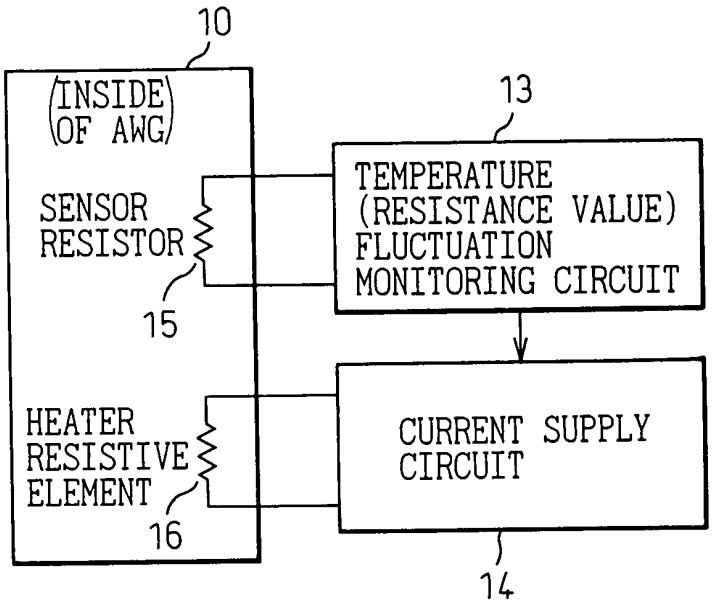
10
(INSIDE OF AWG)
13
SENSOR RESISTOR
15
TEMPERATURE (RESISTANCE VALUE) FLUCTUATION MONITORING CIRCUIT
HEATER RESISTIVE ELEMENT
16
CURRENT SUPPLY CIRCUIT
14

Fig.2

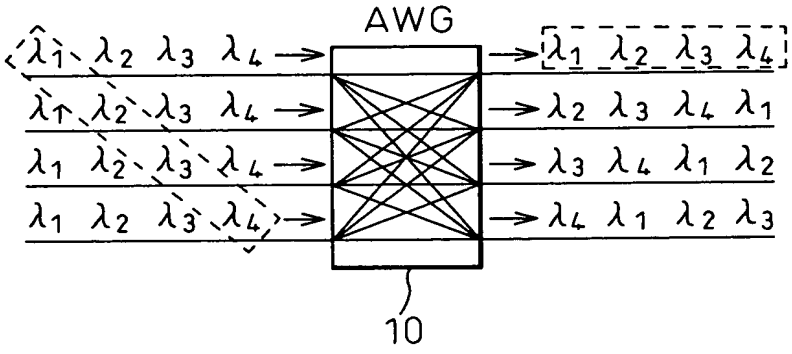
AWG
λ1 λ2 λ3 λ4
λ1 λ2 λ3 λ4
λ2 λ3 λ4 λ1
λ3 λ4 λ1 λ2
λ4 λ1 λ2 λ3
10

Fig.3

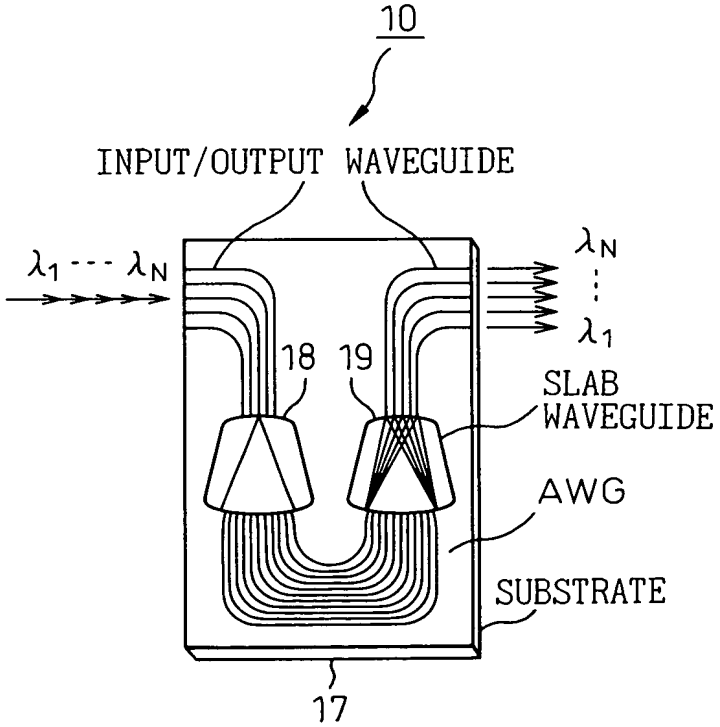
10
INPUT/OUTPUT WAVEGUIDE
λ1 --- λN
λN
λ1
18
19
SLAB WAVEGUIDE
AWG
SUBSTRATE
17

Fig.4

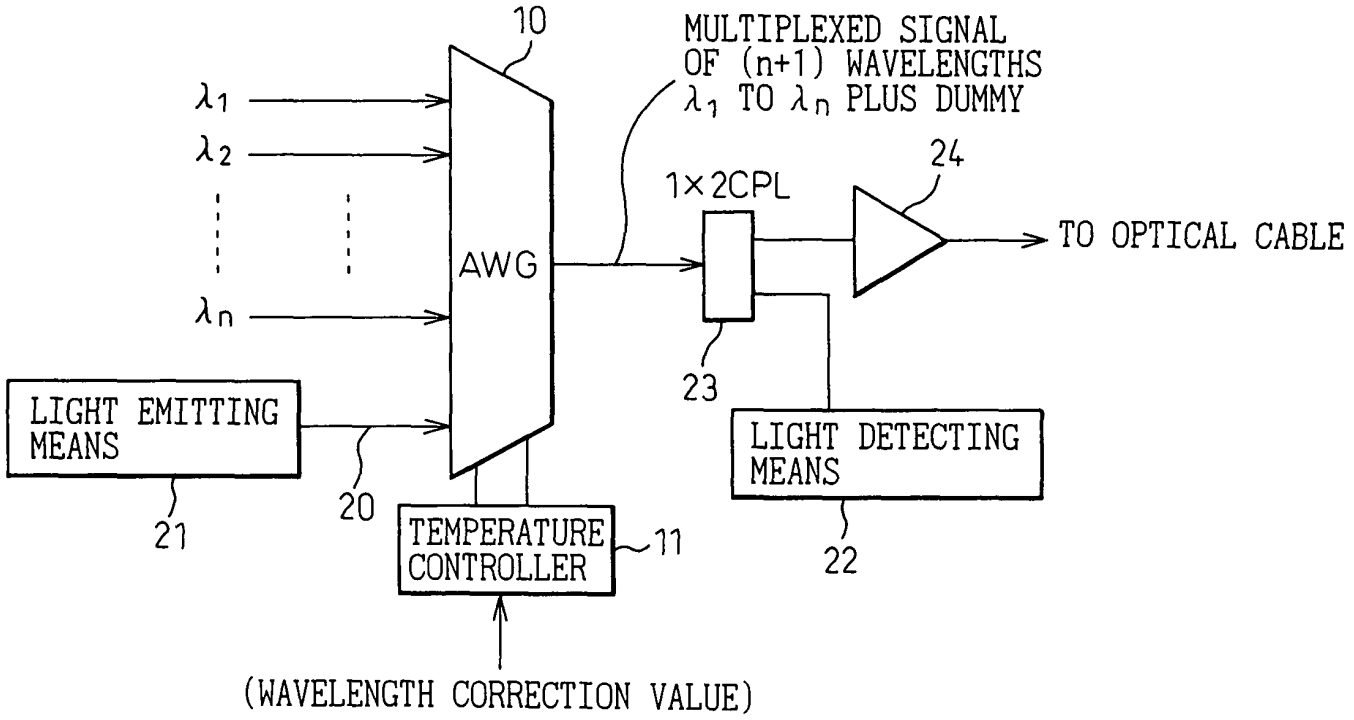
10
MULTIPLEXED SIGNAL
OF (n+1) WAVELENGTHS
λ1 TO λn PLUS DUMMY
λ1
λ2
λn
AWG
1×2CPL
24
TO OPTICAL CABLE
23
LIGHT EMITTING
MEANS
21
20
TEMPERATURE
CONTROLLER
11
LIGHT DETECTING
MEANS
22
(WAVELENGTH CORRECTION VALUE)

Fig.5A

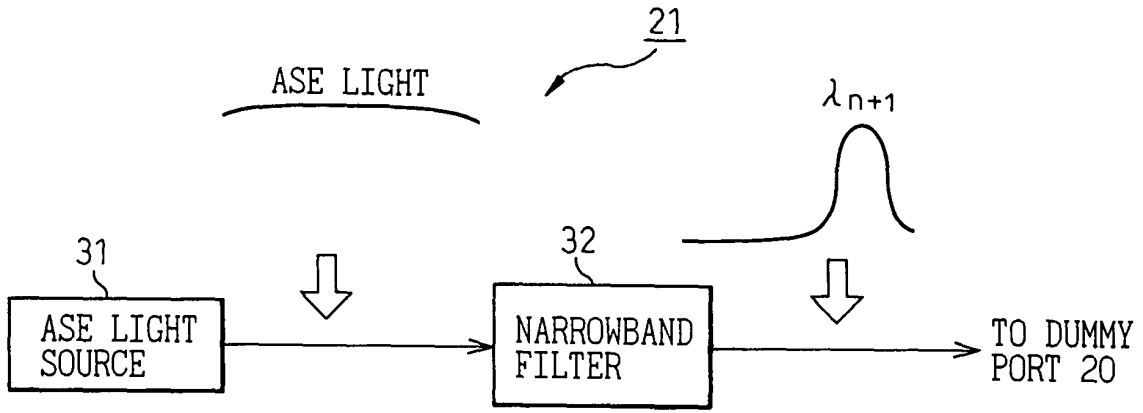
21
ASE LIGHT
λn+1
31
32
ASE LIGHT SOURCE
NARROWBAND FILTER
TO DUMMY PORT 20

Fig.5B

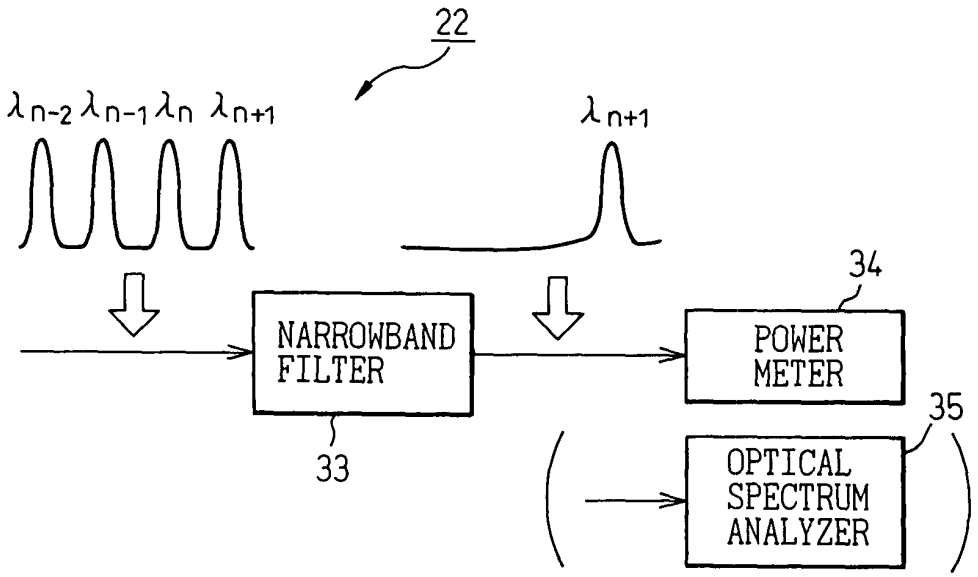
22
λn-2 λn-1 λn λn+1
λn+1
34
NARROWBAND FILTER
POWER METER
35
33
OPTICAL SPECTRUM ANALYZER

Fig.6A

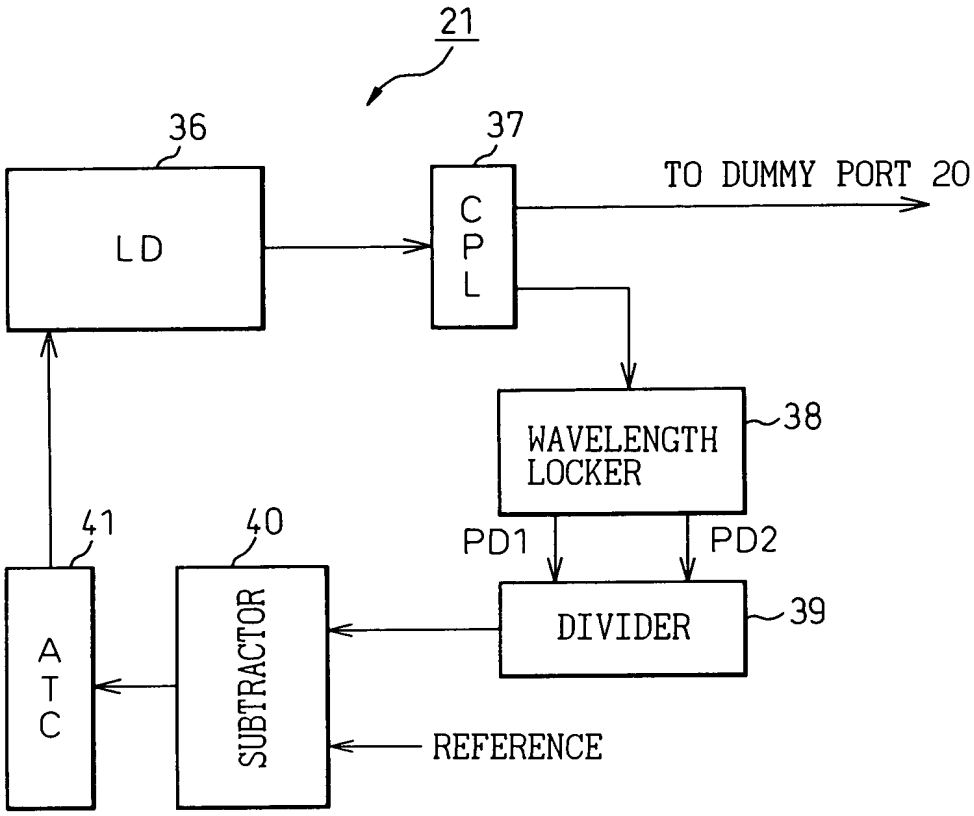
21
36
37
LD
C
P
L
TO DUMMY PORT 20
WAVELENGTH
LOCKER
38
PD1
PD2
DIVIDER
39
41
40
A
T
C
SUBTRACTOR
REFERENCE

Fig.6B

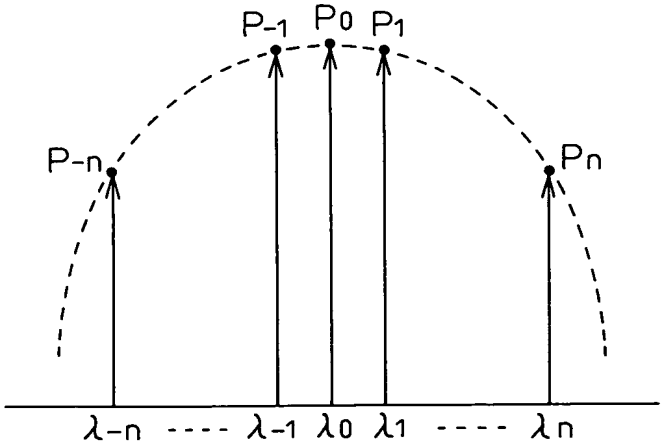
P-1
P0
P1
P-n
Pn
λ-n
λ-1
λ0
λ1
λn

Fig.7

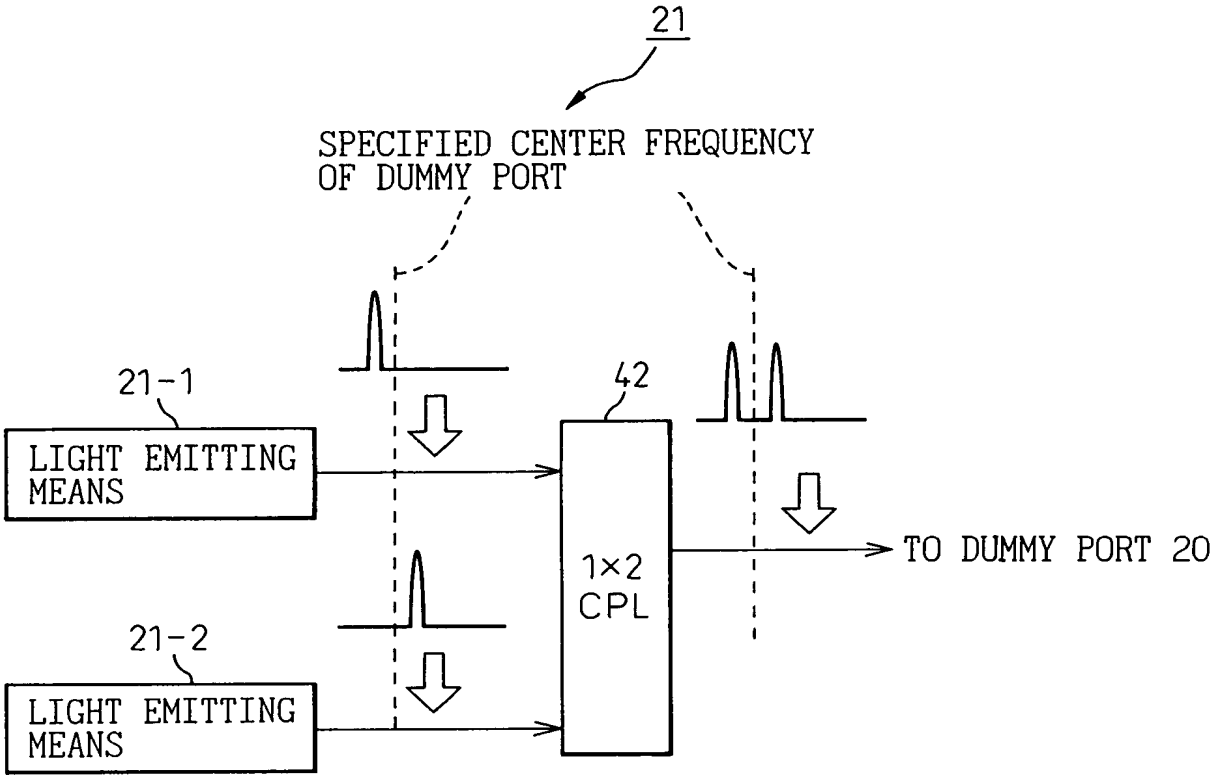

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Fig.8

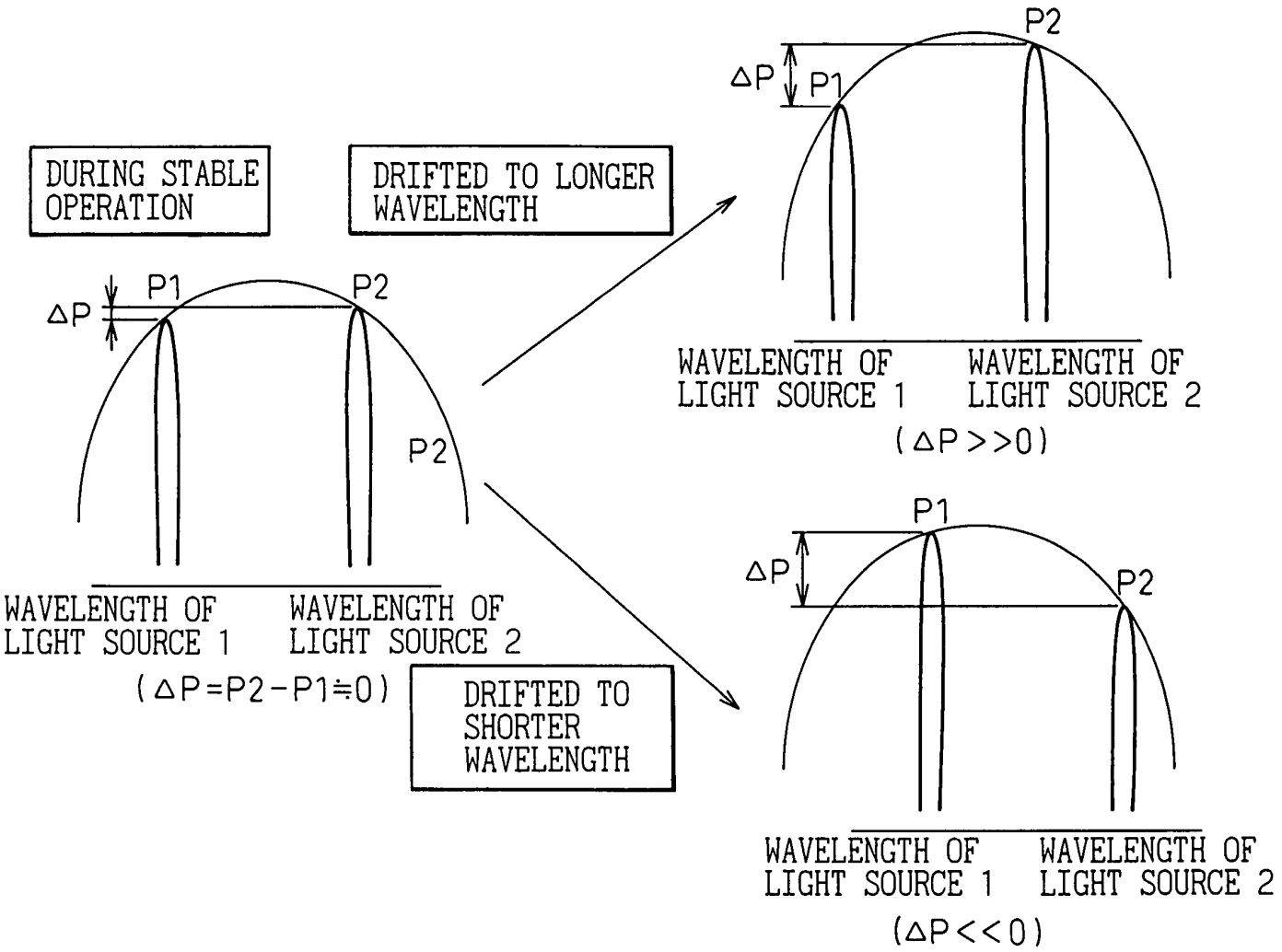
DURING STABLE OPERATION
ΔP
P1
P2
WAVELENGTH OF LIGHT SOURCE 1
WAVELENGTH OF LIGHT SOURCE 2
(ΔP=P2−P1≒0)
DRIFTED TO LONGER WAVELENGTH
ΔP
P1
P2
WAVELENGTH OF LIGHT SOURCE 1
WAVELENGTH OF LIGHT SOURCE 2
(ΔP>>0)
DRIFTED TO SHORTER WAVELENGTH
ΔP
P1
P2
WAVELENGTH OF LIGHT SOURCE 1
WAVELENGTH OF LIGHT SOURCE 2
(ΔP<<0)

Fig.9

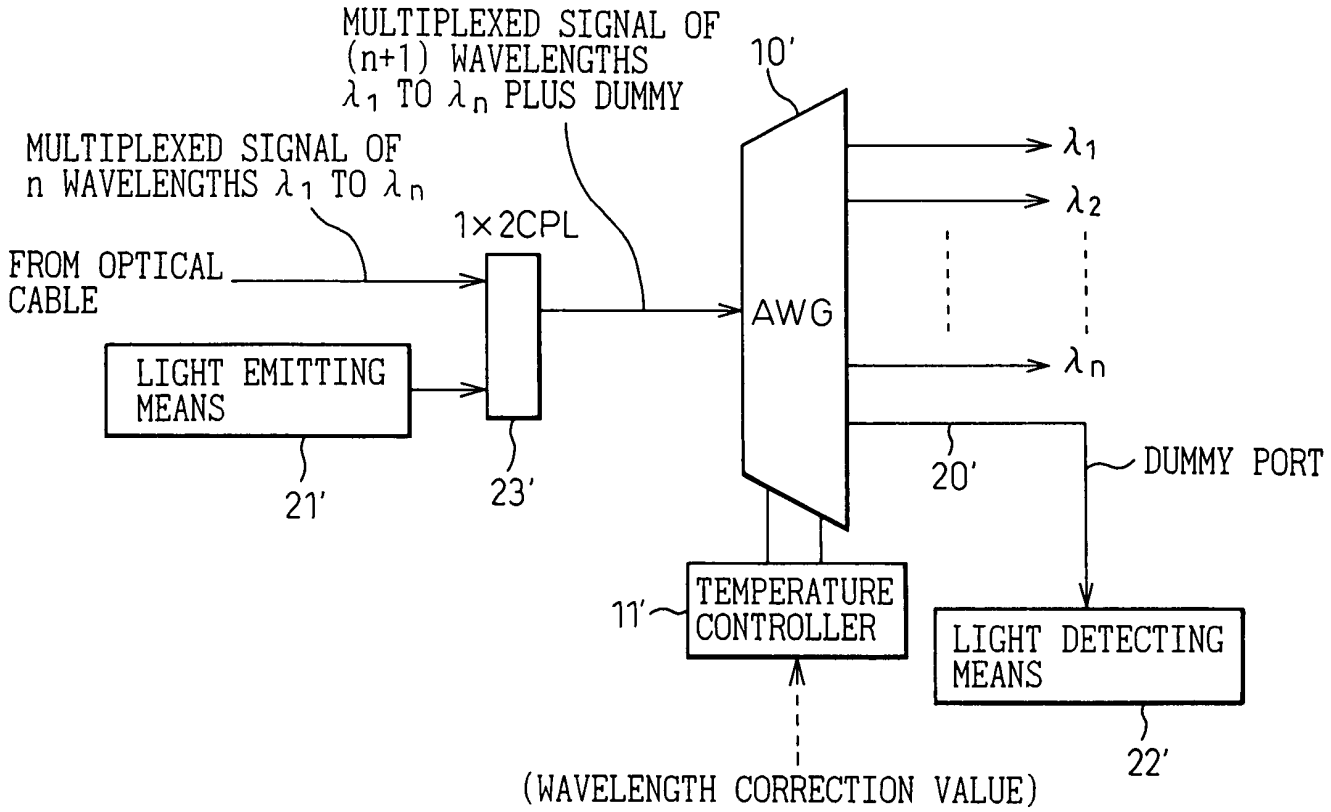
MULTIPLEXED SIGNAL OF
(n+1) WAVELENGTHS
λ1 TO λn PLUS DUMMY
10'
MULTIPLEXED SIGNAL OF
n WAVELENGTHS λ1 TO λn
1×2CPL
FROM OPTICAL
CABLE
AWG
λ1
λ2
λn
LIGHT EMITTING
MEANS
21'
23'
20'
DUMMY PORT
11'
TEMPERATURE
CONTROLLER
LIGHT DETECTING
MEANS
22'
(WAVELENGTH CORRECTION VALUE)

Fig.10

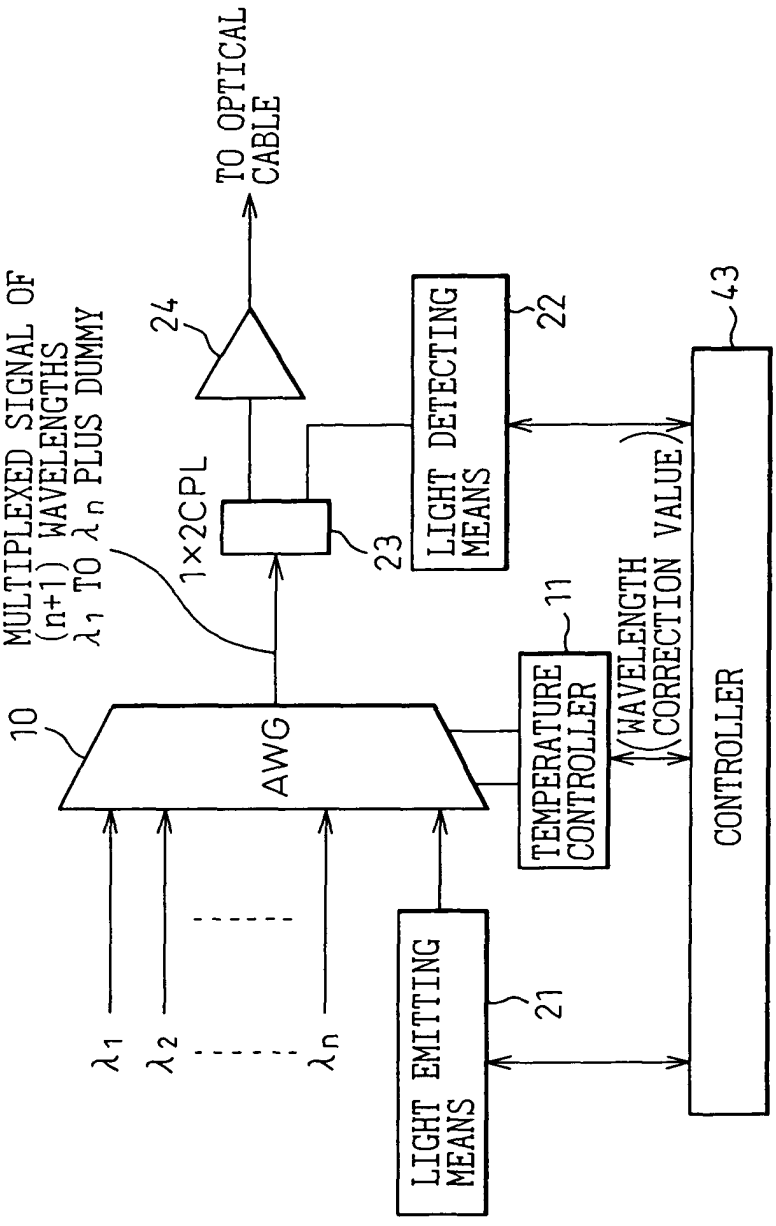
TO OPTICAL CABLE
24
MULTIPLEXED SIGNAL OF (n+1) WAVELENGTHS λ1 TO λn PLUS DUMMY
1×2CPL
23
LIGHT DETECTING MEANS
22
43
10
AWG
11
TEMPERATURE CONTROLLER
WAVELENGTH CORRECTION VALUE
CONTROLLER
λ1
λ2
λn
LIGHT EMITTING MEANS
21

Fig.11

	WAVELENGTH FLUCTUATION	REFERENCE VOLTAGE SETTING	WRITE TO D/A (44)
1	−10pm	+350mV	DAh
2	− 8 pm	+280mV	C 8 h
3	− 6 pm	+210mV	B 6 h
4	− 4 pm	+140mV	A 4 h
5	− 2 pm	+70mV	92 h
6	± 0 pm	± 0	80 h
7	2 pm	−70mV	6 Eh
8	4 pm	−140mV	5 Ch
9	6 pm	−210mV	4 Ah
10	8 pm	−280mV	38 h
11	10pm	−350mV	26 h

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Fig.12

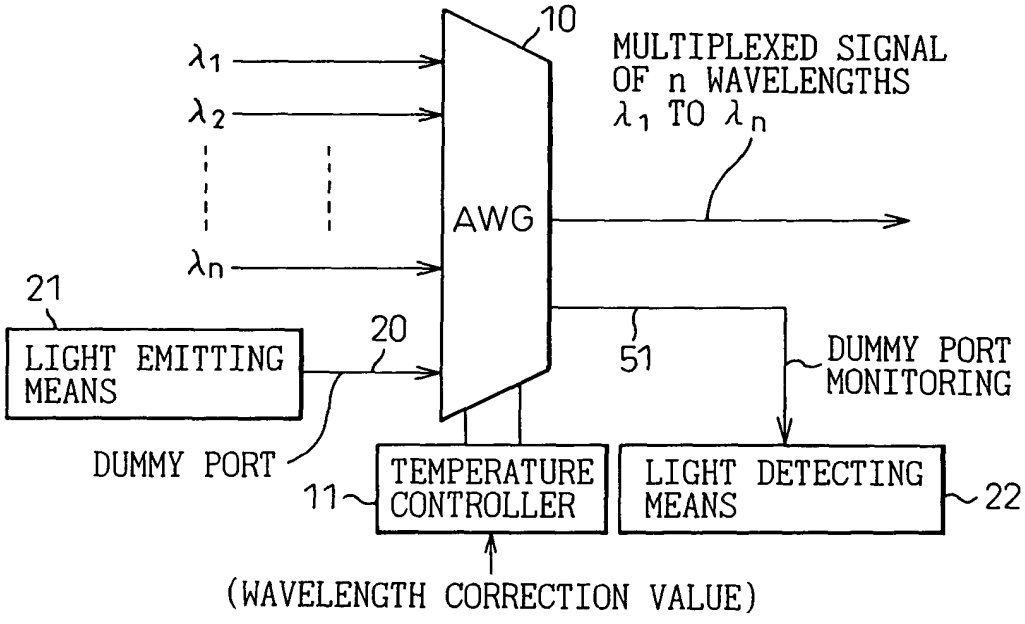

Fig.13

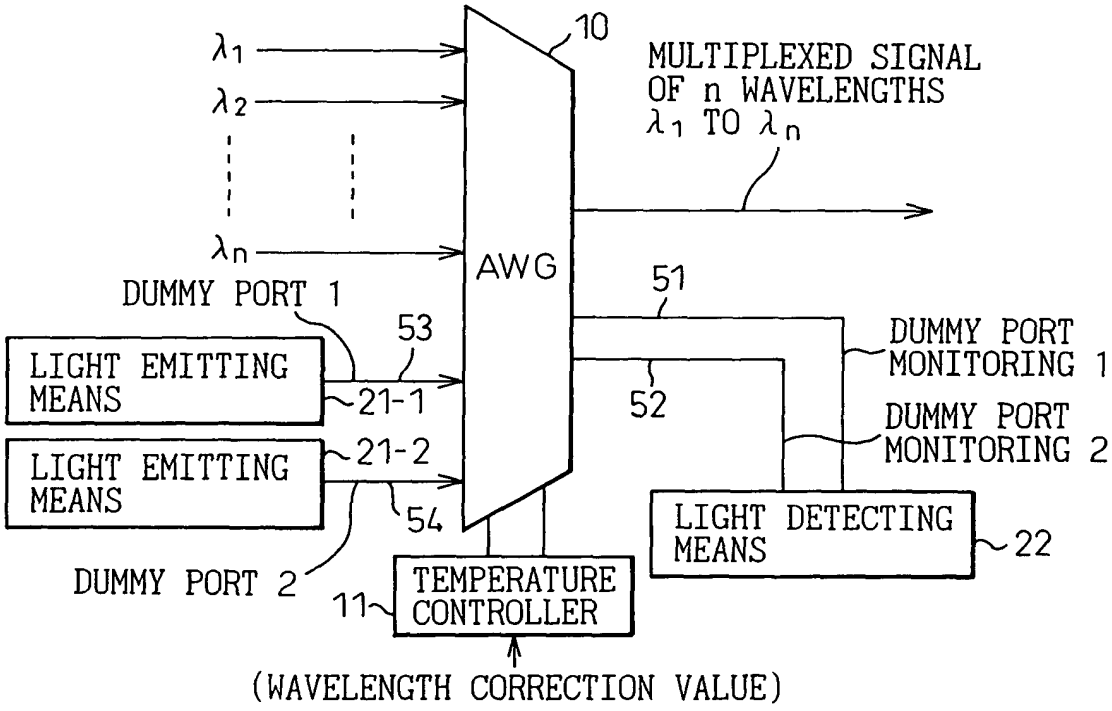

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Fig.14

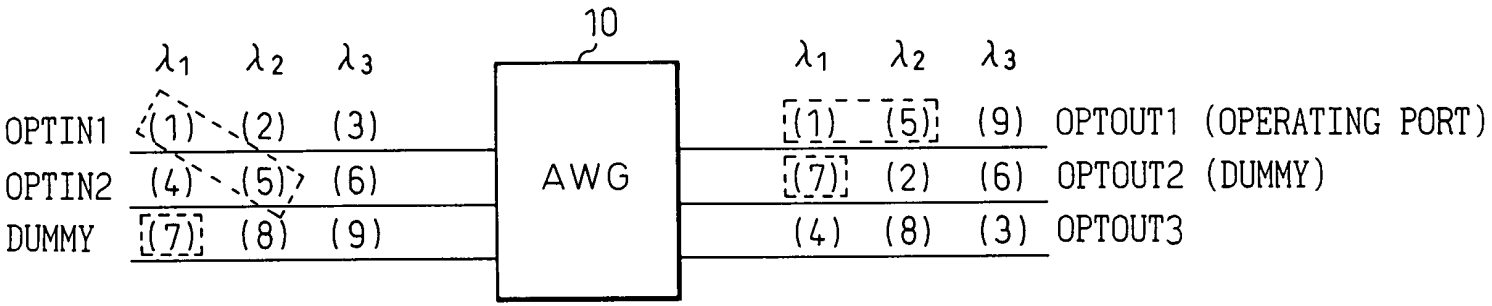
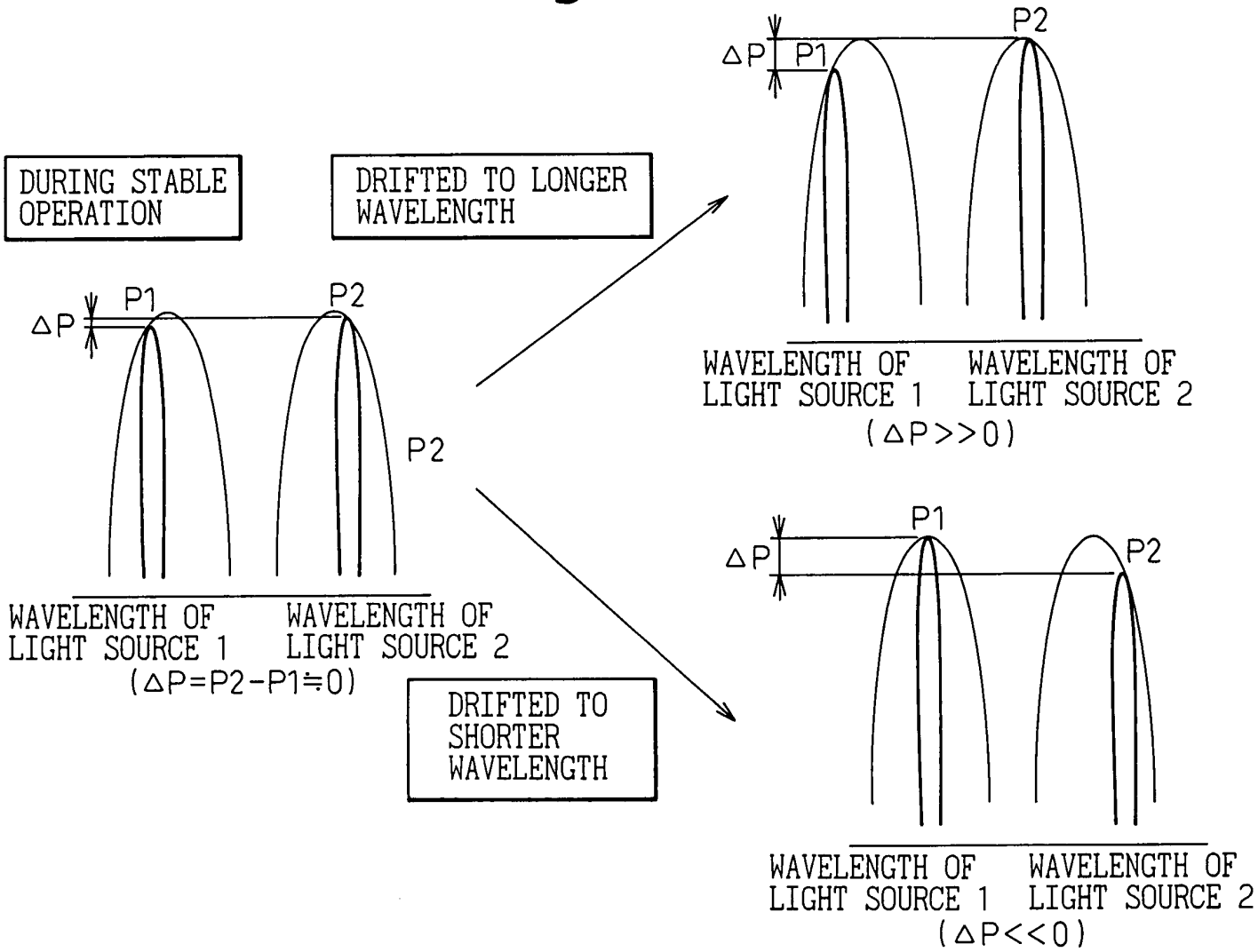

10
λ1 λ2 λ3
OPTIN1 (1) (2) (3)
OPTIN2 (4) (5) (6)
DUMMY (7) (8) (9)
AWG
λ1 λ2 λ3
(1) (5) (9) OPTOUT1 (OPERATING PORT)
(7) (2) (6) OPTOUT2 (DUMMY)
(4) (8) (3) OPTOUT3

Fig.15


DURING STABLE OPERATION
DRIFTED TO LONGER WAVELENGTH
DRIFTED TO SHORTER WAVELENGTH
ΔP
P1
P2
WAVELENGTH OF LIGHT SOURCE 1
WAVELENGTH OF LIGHT SOURCE 2
(ΔP=P2-P1≒0)
(ΔP>>0)
(ΔP<<0)